USER MANUAL

magmaweld™

RS 200 MK
RS 300 MK
RS 400 MK

MIG/MAG WELDING MACHINE

MAGMA MEKATRONİK MAKİNE SANAYİ VE TİCARET A.Ş.

www.magmaweld.com

CONTENTS

SAFETY RULES....3

IDENTIFYING SAFETY INFORMATION

- These symbols are being used to identify potential risks.
- When seen a safety symbol in the manual, it must be understood that there is an injury risk and following instructions must be read carefully to avoid potential risks.
- While welding, keep the third persons and especially the children away from the work area.

UNDERSTANDING THE SAFETY WARNINGS

Read carefully the manual and the labels and the safety warnings on the machine.

- Make sure that the warning labels positioned on your machine are in good order. Renew the damaged and the missing labels.
- Learn to operate the machine and how to make the controls properly.
- Operate your machine in convenient work areas. Improper modifications affect the safety of your machine negatively and shorten its lifetime.

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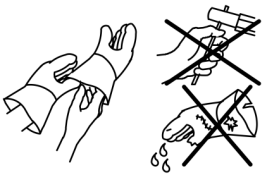
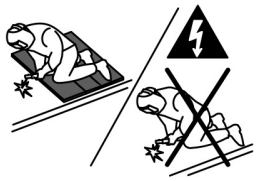
ELECTRICAL SHOCK COULD BE FATAL

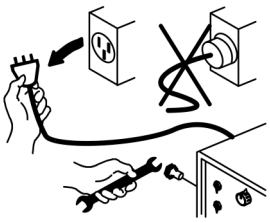
Installation procedure must comply with national electricity standards and other relevant regulations and ensure that installation is performed by qualified persons.



- Wear dry, hole-free insulating gloves and body protection.
- Do not touch electrode with bare hand. Do not wear wet or damaged gloves and body protection.
- Do not touch live electrical parts.
- Never touch electrode while in contact with working surface, ground or another electrode which is connected to a different machine .



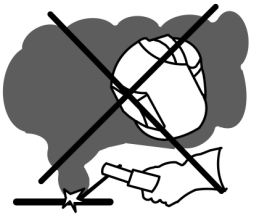
- Protect yourself from electric shock by insulating yourself from work and ground. Use non-flammable, dry insulating material if possible, or use dry rubber mats, dry wood or plywood, or other dry insulating material big enough to cover your full area of contact with the work or ground, and watch for fire.
- Never connect up more than 1 electrodes or wires to the machine.



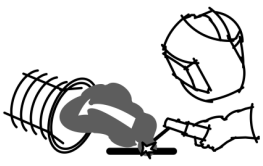
- Turn off the machine, when not in use .
- Disconnect input plug or power before working on machine.
- Frequently inspect input power cord for damage or bare wiring - repair or replace cord immediately if damaged.
- Be sure input ground wire is properly connected to a ground terminal in disconnect box or receptacle.

BREATHING WELDING FUMES CAN BE HAZARDOUS TO YOUR HEALTH

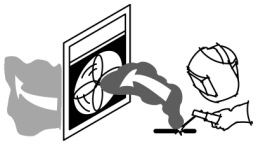
Inhaling fumes and gases over a long period of time, generated during welding is dangerous and forbidden .



- Irritation of the eyes, nose and throat are symptoms of inadequate ventilation. Take immediate steps to improve ventilation. Do not continue welding if symptoms persist.
- Install a natural or forced air ventilation system in the work area.
- Install an adequate ventilation system in the welding and cutting area, if needed install a system that can remove the fume and vapor accumulated in the entire work area, to prevent pollution use adequate filtration in discharge.

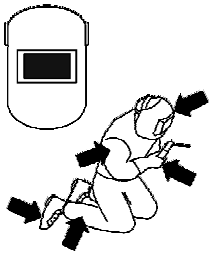


- In the event of welding in small, confined places, or welding lead, beryllium, cadmium, zinc, zinc coated or painted materials; also wear a fresh air supplied respirator in addition to the above mentioned rules .
- Always have a trained watchperson nearby, while working in small confined places. Avoid working in such confined places if possible.
- If gas cylinders are grouped in a different area, make sure that it is a well-ventilated area. When not being used, turn off the main cylinder valve and watch out for gas leakage .



- Shielding gasses such as argon is denser than air and when being used in confined places, can be inhaled in place of air, and this is dangerous for your health.
- Do not perform welding operations near chlorinated hydrocarbon vapors produced by degreasing or painting.

ARC RAYS CAN BURN EYES AND SKIN



- Use adequate welding helmet with correct shade of filter (4 or 13 considering TS EN 379) to protect your eyes and face.
- Protect open parts of your body (arms, neck and ears) from arc rays by adequate protective clothing.
- To protect others by arc rays and hot metals, surround the working area with flame proof curtains which are higher than eye level and put up warning boards.

FLYING METALS CAN INJURE EYES

- Welding, wire brushing and grinding cause sparks and flying metal.
- To prevent injuries wear appropriate safety glasses with side shields even under your welding helmet .

NOISE CAN DAMAGE HEARING

- Noise from certain industrial processes or equipments can damage hearing.
- Wear approved ear protection if noise level is high.

HOT PARTS CAN CAUSE SEVERE BURNS

- Do not touch hot parts.
- Allow cooling time before servicing.
- If needed to hold hot parts, use appropriate tool, insulating gloves and fireproof clothes.

MOVING PARTS CAN CAUSE INJURY

- Keep away from moving parts.
- Keep all doors, panels, and guards closed and secured.
- Wear shoes with metal protection over the fingers.

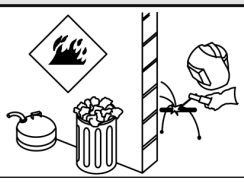
WORKING IN SMALL AND CONFINED PLACES CAN BE DANGEROUS

- While welding and cutting in small, confined places, always have a trained watchperson nearby.
- Avoid working in such confined places.

WELDING WIRE MAY CAUSE INJURY

- Do not point the torch toward any part of a human body, other persons or any type of metal when unwinding welding wire.
- While extracting the wire from the spool by hand, it may spring suddenly and injure you or a nearby person, protect especially your eyes and face.
- Make sure that there is no one close.

WELDING CAN CAUSE FIRE OR EXPLOSION



- Never weld near flammable material. It may cause fire or explosions.
- Before starting to weld, move flammables away or protect them with flame-proof covers.

- Do not weld on and cut closed tubes or pipes.
- Before welding on closed containers, open and clear them entirely. Welding operations on these parts must be performed with the utmost caution.
- Never weld containers or pipes containing or which have contained substances that could give rise to explosions.

Welding equipments warms up so never position them on flammable surfaces.

- Welding sparks can cause fire. For that reason, keep extinguishing means, such as fire extinguishers, water and sand easy reach.
- Have and maintain security valves, regulators and other valves on the flammable, explosive and compressed gas circuits in good condition by periodical controls, used for welding and cutting operations.

FALLING UNIT CAN CAUSE INJURY

Wrong positioned power source or other equipment may cause serious injury to persons or damage to objects.

- While repositioning the power source always carry by using the lifting eye. Never pull cable, hose or torch. Always carry the gas cylinders separately.
- Before carrying the welding and cutting equipment, disassemble all the connections between and separately carry the small ones by handgrips and the big ones by lifting eyes or by using appropriate vehicles like forklifts.
- Install your machine on flat platforms having maximum 10° slope that it does not fall over. Install it on well ventilated, non-confined places away from the dust, also avoiding the risk of falling caused by cables and hoses. For gas cylinders not to fall over, attach it to the mobile machine or to the wall with a chain.
- Ensure that operators easily reach the controls and connections on the machine.

MAINTENANCE MADE BY UNQUALIFIED PERSONS MAY CAUSE INJURIES

- Electrical devices should not be repaired by unqualified persons. Improper repairs can cause serious injuries or even death during applications.
- The components of the gas circuit works under pressure. The service given by unqualified persons may cause explosions and operators can be injured seriously.

OVERUSE CAN CAUSE OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block airflow to unit.
- Do not filter airflow to unit without the approval of manufacturer.

ARC WELDING CAN CAUSE INTERFERENCE

- Electromagnetic energy arising during welding and cutting operations can interfere with sensitive electronic equipment such as microprocessors, computers, and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- To avoid possible EMC damages, locate welding operation as far as possible (100 meters) from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area .

STATIC (ESD) CAN DAMAGE PC BOARDS

- Put on grounded wrist strap before handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

PROTECTION

- Do not expose the welding machine to rain, protect from water drops and vapour.

LIFETIME

- The lifetime determined by Ministry of Industry and Trade is 10 years.

OBEY ALL THE SAFETY RULES STATED IN THE MANUAL!

ELECTROMAGNETIC COMPATIBILITY (EMC)

ELECTROMAGNETIC EMISSION

- All electrical equipment generates small amounts of electromagnetic emission due to current transferring in the equipment. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result . Electrical emissions may affect not only welding machines but also many kinds of electrical equipment like radio and TV reception, numerical controlled machines, telephone systems, computers etc.
- Welding and cutting machines have been designed to work for professional and industrial use; for other applications to contact the manufacturers.
- The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding the welding circuit, in other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.
- The welding circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding current return paths which may damage the earth circuits of other equipment.
- Extra precaution may be required when the welding power source is used in a domestic establishment.
- Special measures shall be taken to achieve compliance with welding power source including HF frequency for arc ignition and stabilizing; it may be required use of shielded cables and in any case to resolve the particular implementation (e.g. with robot, computer and any other electrical and electronic equipment connected to welding power source) to call the technical assistance of the manufacturer.

ASSESMENT OF THE SURROUNDING AREA

Before installing the welding equipment, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account- if needed arrange the working hours that not coincide with those.

- Other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the welding equipment,
- Radio and television transmitters and receivers,
- Computer and other control equipment,
- Safety critical equipment,
- Presence of heart beat regulators, heart cells, hearing devices or etc. nearby,
- Equipment used for calibration or measurement,
- The immunity of other equipment in the environment.

The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures.

METHODS OF REDUCING EMISSIONS

- Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. OERLIKON welding machines are filtered against emission according to standards. If interference still occurs, it may be necessary to take additional precautions such as filtering of the mains supply.
- The welding equipment should be routinely maintained according to the manufacturer's recommendations. The welding equipment should not be modified without the approval of manufacturer.
- The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level. Power cables and signal cables should be kept separately.
- Keeping cables in the shape of -8- and taping together reduce emission.
- Connect earth clamp to workpiece as close to the weld as possible. But the user should be control whether this situation damage to people and equipment or not.

1. TECHNICAL INFORMATIONS

1.1 GENERAL EXPLANATIONS

RS 200 MK, RS 300 MK and RS 400 MK welding machines are three phase, constant voltage compact type MIG/MAG welding machines.

The power supply is forced cooled and protected against overheating by a thermostat.

All the controls are placed on the front panel.

Running gear and cylinder rack are factory installed for better mobility in the workshop.

Output voltage of the RS 200 MK can be adjusted through 10 steps between 16-26V, output voltage of the RS 300 MK can be adjusted through 21 steps between 16-29V, and output voltage of the RS 400 MK can be adjusted through 28 steps between 16-34V.

Wire feeding system is in the same cabinet, so the machine occupies less space and it can be put into service faster than the separate wire feeder models.

1.2 APPLICATION AREA

RS 200 MK is for welding thin steel, stainless steel and aluminium sections 24 hours / 7 days.

RS 300 MK is thin metal manufacturer's choice due to its high (60%) duty cycle. Also this machine could be used at the repair shops up to medium thicknesses. This is an easy oparated simple, cost efficient and long-life machine.

RS 400 MK is a very good selection for medium thickness metal welding where mix gases and argon are used therefore it is a very good choice for stainless steel and aluminium MIG welding.

1.3 DATA PLATE

MAGMA MEKATRONİK MAKİNE SAN. VE TİC. A.Ş. Organize Sanayi Bölgesi 5.Kısım Manisa-TÜRKİYE	EN 60974-1 EN 60974-10
RS 200 MK	CE
3~	Seri No :

	40 A / 16 V - 240 A / 26 V				
	-----	X	23 %	60 %	100 %
	U_0 V 17 - 36	I_2	240 A	160 A	125 A
		U_2	26 V	23 V	21 V
3~	U_1 V 380 50 Hz	T 16 A	I_1 A 12	I_1 A 7	I_1 A 5
CL.I. H		S_1	7,9 kVA	4,6 kVA	3,3 kVA
IP 21					S

MAGMA MEKATRONİK MAKİNE SAN. VE TİC. A.Ş. Organize Sanayi Bölgesi 5.Kısım Manisa-TÜRKİYE	EN 60974-1 EN 60974-10
RS 300 MK	CE
3~	Seri No :

	40 A / 16 V - 300 A / 29 V				
	-----	X	40 %	60 %	100 %
	U_0 V 19 - 44	I_2	300 A	250 A	200 A
		U_2	29 V	27 V	24 V
3~	U_1 V 380 50 Hz	T 25 A	I_1 A 20	I_1 A 15	I_1 A 12
CL.I. H		S_1	13,2kVA	9,9kVA	7,9 kVA
IP 21					S

MAGMA MEKATRONİK MAKİNE SAN. VE TİC. A.Ş. Organize Sanayi Bölgesi 5.Kısım Manisa-TÜRKİYE	EN 60974-1 EN 60974-10
RS 400 MK	CE
3~	Seri No :

	45 A / 16 V - 400 A / 34 V				
	-----	X	45 %	60 %	100 %
	U_0 V 18,5 - 45	I_2	400 A	350 A	270 A
		U_2	34 V	31,5 V	27,5 V
3~	U_1 V 380 50 Hz	T 32 A	I_1 A 28	I_1 A 22	I_1 A 15
CL.I. H		S_1	18,5kVA	14,5kVA	9,9 kVA
IP 21					S

3 Phase Transformer Rectifier

Horizontal Characteristics

MIG / MAG Welding

Line Input 3 Phase Alternative Current

Appropriate To Operate In Dangerous Work Area

Direct Current

Fuse

X :Duty Cycle*
U_0 :Open Circuit Voltage
U_1 :Line Voltage and Frequency
U_2 :Rated Welding Voltage

***For more information about Duty Cycle, check page 10.**

I_1 :Input Current
I_2 :Rated Welding Current
IP 21 :Protection Class
S_1 :Input Power
CL.I. :Insulation Class

1.4 TECHNICAL SPECIFICATIONS

	UNIT	RS 200 MK	RS 300 MK	RS 400 MK
POWER SOURCE				
Line Voltage (3 Phases 50 Hz)	V	380	380	380
Input Power (60%)	kVA	4.6	9.9	14.5
Input Current (60%)	A	7	15	22
Recommended Line Fuse	A	3x16	3x16	3x32
Open Circuit Voltage	V_{DC}	17 - 36	19 - 44	18,5 - 45
Welding Current Range	A_{DC}	40 - 240	40 - 300	45 - 400
Rated Welding Current	A_{DC}	160	250	350
Voltage Adjustment Steps (Coarse x Fine)		1x10	3x7	4x7
Dimensions (LxWxH)	mm	890x460x950	890x510x950	890x510x950
Weight	kg	90	95	116
Protection Class		IP21	IP21	IP21
WIRE FEEDING UNIT				
Drive Roll Size (V socket)	mm	0.6 / 0.8	0.8/1.0	1.0/1.2
Wire Feding Speed	m/dk	2 - 20	2 - 20	1 - 20
Trigger Control		2/4	2/4	2/4

1.5 ACCESSORIES

	RS 200 MK	RS 300 MK	RS 400 MK
STANDART AKSESUARLAR			
Earth Clamp and Cable ($25mm^2$-3m)	KM96013	KM96013	-
Earth Clamp and Cable ($35mm^2$-3m)	-	-	KM96023
Gas Hose	D400202	D400202	D400202
CO_2 Heater	A259009002	A259009002	A259009002
Gas Pressure Regulator (Ar-CO_2)	A259001002	A259001002	A259001002
OPSİYONEL AKSESUARLAR			
Torch MBG 25 AK-3 230A (%60 CO_2)	5290022205	5290022205	-
Torch MBG 25 AK-4 230A (%60 CO_2)	5290022206	5290022206	-
Torch MBG 36 KD-3 320A (%60 CO_2)	-	-	5290022304
Torch MBG 36 KD-4 320A (%60 CO_2)	-	-	5290022305

2. INSTALLATION

2.1 UPON RECEIPT AND CLAIMS

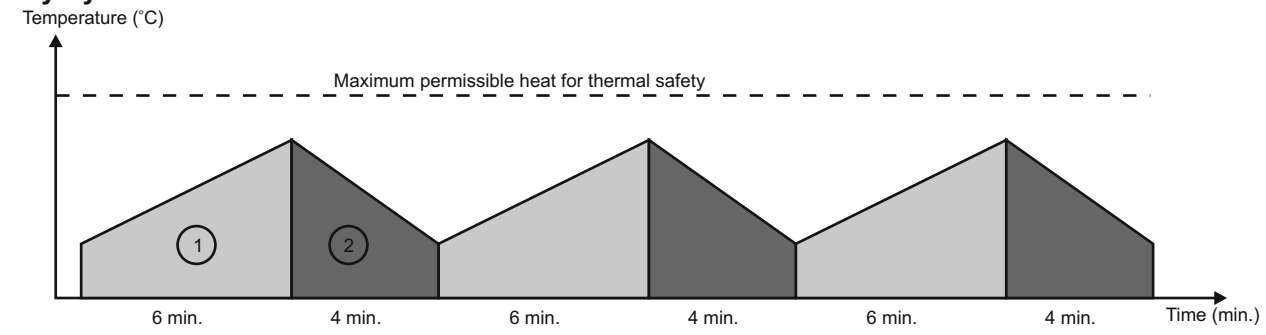
- Be sure that you have received all the items that you have ordered. In case of any items are missing or damaged, contact your supplier immediately.
- In the event of damaged or missing delivery, **draw up a record, take a photo** and **report it** to the shipping agency and MAGMA MEKATRONIK with the photocopy of shipping bill.
  (MAGMA MEKATRONIK: +90 236226 27 28)

- Be sure that none of the following 5 items are missing in the box.
  - Power Source and attached line cable
  - Earth Clamp and Cable
  - Gas Hose
  - Certificate of Warranty
  - User Manual

2.2 WORK AREA

- Make sure that your line voltage is 3 Phase 380V/50Hz and you have a neutral and earth line present at your work place.
- In order to cool down the machine and have an efficient work, keep the machine at least 30 cm away from the surrounding objects. Do not place any heat source, as oven, to front side of the machine where the cooling air is taken from. Welding machine must not be effected of heat directly.
- Do not place the machine in small and narrow places. Beware of excessive dust and dirt.
- Keep your machine away from wet and humid places.
- Do not operate the machine under direct sunlight, rain and wind. Machines should be operated on **lower capacities** when ambient air temperature exceeds **40ºC**.
- Please use a suitable exhaust system for gases and cutting vapours. Use breathing apparatus if there is a risk of inhaling any welding or cutting vapours.
- Avoid welding where air-flow is high. Protect the welding area with curtains or mobile screens.
- Transport and place the device on firm and level ground so that it may not fall over. The maximum permissible angle of inclination for transport and assembly is 10°.
- If the cylinder is placed on the machine lock the chain to secure the tube, if not be sure that gas cylinder is chained vertically to a wall.
- This machine is protected electronically against overloading. Do not use stronger fuses than those stated on the type plate of the device.
- Ensure that the earth clamp has good and direct contact near the welding location. Do not direct welding current over chains, ball bearings, steel cables, protection conductors etc., Otherwise they may melt.
- Ensure that operators can easily reach the machine controls and equipment connections.
- Use lifting eyes for lifting the machine. Do not lift the machine by using a fork-lift or a similar vehicle.
- The electrical socket behind machine is only for heating CO_2. Do not use it for any other purpose.

Duty Cycle



Duty cycle defines the percentage of welding time out of a period of 10 minutes at a given current. For example, a 250A welder with a 60% duty cycle must be rested (2) for 4 minutes, after 6 minutes of continuous welding (1). If the unit overheats, thermostats will open and welding will stop. Wait for the unit to cool down. In this case ambient temperature might be over 40ºC, therefore either reduce the current or work with lower duty cycle. Exceeding duty cycle can damage unit and void warranty.

2.3 COMPONENTS OF THE MACHINE

RS 200 MK, RS 300 MK and RS 400 MK have the same appearance and components. But number of step switches, steps and earth cable connections are different. RS 200 MK has one step switch with 14 steps (2x7). RS 300 MK has 2 step switches with 21 steps (3x7). RS 400 MK has 2 step switches with 28 steps (4x7).

Besides, both RS 200 MK and RS 300 MK have one earth cable connection **(7)** when RS 400 MK has 2 earth cable connections **(7)**.

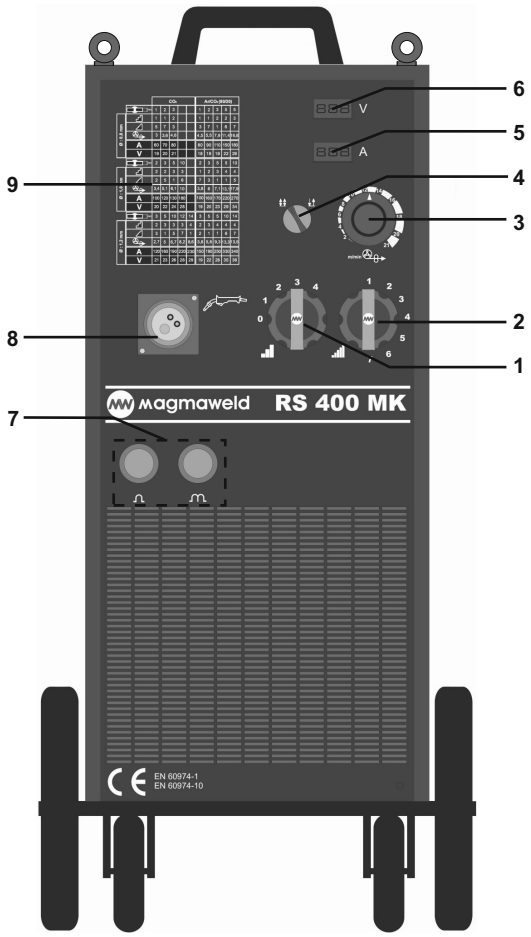


Figure 1: Front View

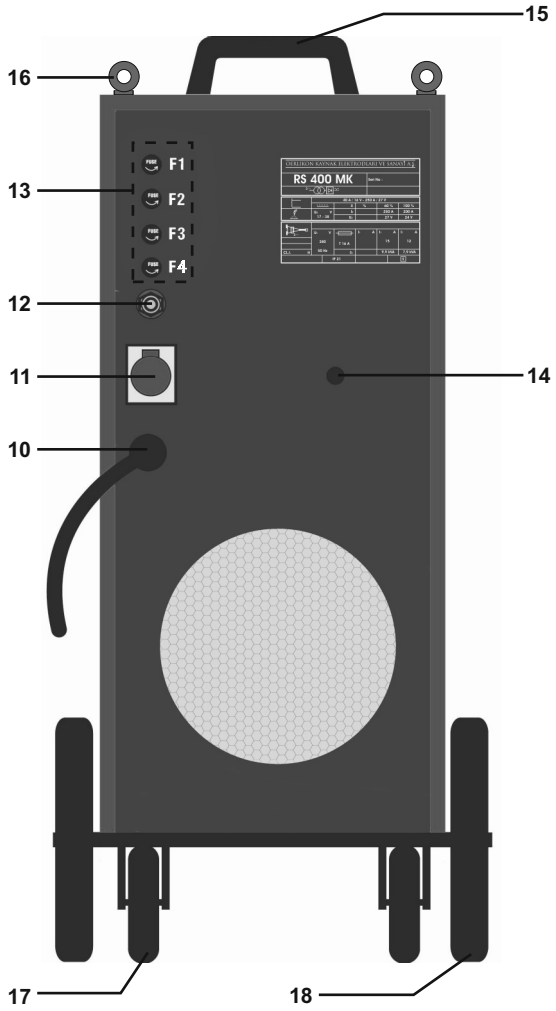


Figure 2: Back View

1	Line Voltage & Coarse Step Switch
2	Fine Step Switch
3	Wire Feeding Speed Adjustment Knob
4	Switch For 2/4 Function Selection
5	Digital Voltmeter
6	Digital Ampermeter
7	Earth Cable Connection
8	Torch Connection
9	Welding Parameters Chart

10	Mains Cable
11	Electrical Socket for CO_2 Heater
12	Gas Supply Inlet
13	Fuses
14	Drum Feeding
15	Handle
16	Lifting Eye
17	Swivel Wheel
18	Wheel

2.4 INSTALLATION OF THE MACHINE

2.4.1 Connect The Machine To Power Supply

•Before plugging your machine to the electrical line check carefully the 3 live phase, neutral and earth connections are present.

380V
50 - 60 Hz

The connection of line cable to the machine is made in the factory. Connection to the main lines is made by the end user. It has to be performed by qualified electricians or by the people trained in this area.

For RS 200 MK, RS 300 MK and RS 400 MK; 4x2.5mm² 5mt line cables have been used. Earth cable has been labeled as is seen in the following figure (Figure 3).

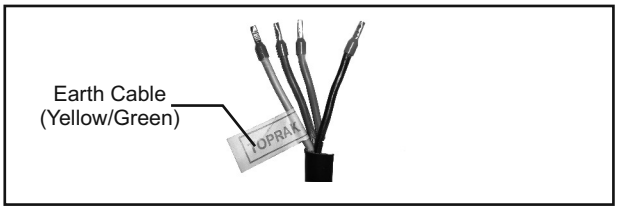


Figure 3: Line Cable

Unexpected results may occur if a mistake is made in the network connection. While inserting the plug into the socket, pay attention that main switch is positioned at "0". Now turn the switch to "1" and observe at noise of cooling fan and monitor the open circuit welding voltage on the voltmeter.

2.4.2 Connect The Torch

Make sure that liner and contact tip match with diameter of welding wire.

Insert the torch in to the torch connector **(11)** as seen in the figure (Figure 4).

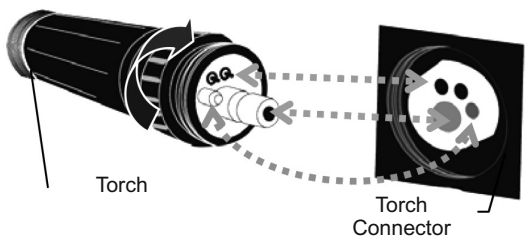


Figure 4: Connecting The Torch

2.4.3 Connect The Earth Cable To The Machine

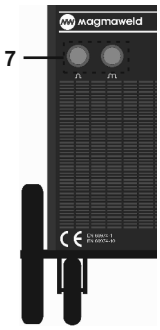


Figure 5: Connection Of Earth Cable To The Machine

Connect the earth cable to the work piece connetion **(7)**.

2.4.4 Connect The Earth Clamp

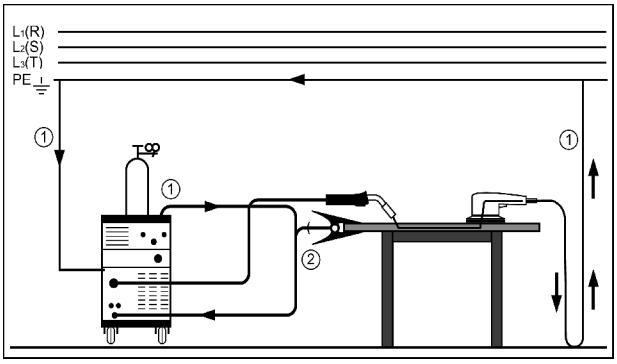


Figure 6: Connecting The Earth Clamp

- Mount the earth clamp in the immediate vicinity of the welding point such that the welding current cannot find its own way via machine components, ball bearings or electrical circuits.

•Connect the earth clamp firmly to the welding bench or the workpiece.

Do not place the earth clamp on the welding machine or the gas cylinder; otherwise the welding current will be carried via the protective conductors and it will destroy these.

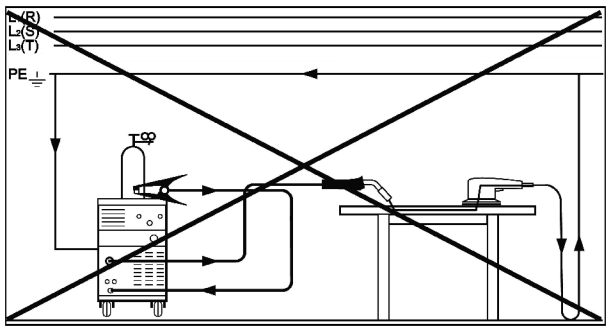


Figure 7: Incorrect Connection of Earth Clamp

2.4.5 Connect The Gas Cylinder

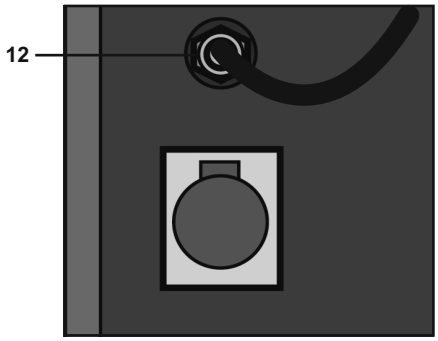


Figure 8: Connecting Gas Hose To The Machine

- Connect one end of gas hose **(24)** to the machine gas supply inlet **(12)**. The other end is for connecting the hose to pressure regulator (Figure 8).

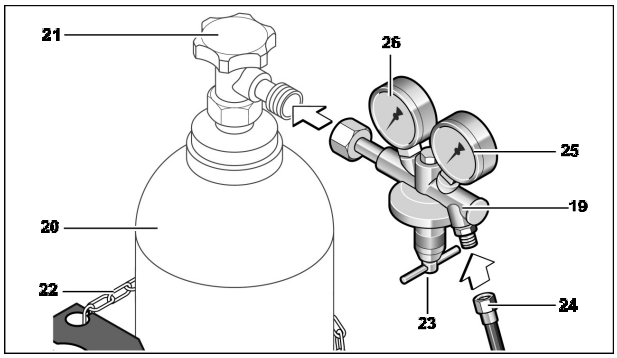


Figure 9: Connecting The Gas Cylinder

19 Pressure Regulator
20 Gas Cylinder
21 Gas Cylinder Valve
22 Chain
23 Pressure Adj. Valve
24 Gas Hose
25 Flowmeter
26 Manometer

- After placing the gas cylinder on its platform, fasten it with the chain. To operate safely and get best results use approved gas regulators and heaters.
- Briefly open the gas cylinder valve **(21)** several times in order to blow out any dirt and particles present .
- Connect the pressure regulator **(19)** to the shielding gas cylinder **(36)**.
- Screw the gas hose **(24)** pressure regulator **(19)** and open the shielding gas cylinder **(20)**.
- Set the gas quantity with the pressure adjustment valve **(29)**. For more information about gas adjustment check the following page.

2.4.6 Thread The Welding Wire

To avoid any problems during operation, this part has to be understood correctly. Inappropriate and incomplete operation may result in poor welding quality and harm the torch, this kind of failures are out of warranty.

- Ensure that the diameters of the drive rolls are correct.
- Raise the pressure assembly of the drive rolls (flange).

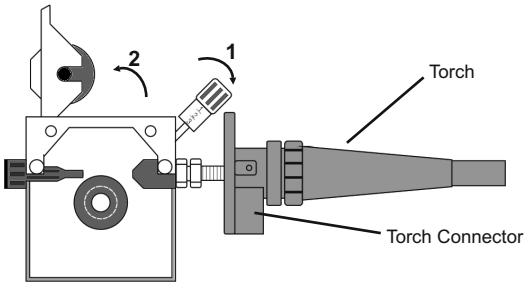


Figure 10: Pressure Assembly - Open

- Thread the wire to the torch through the guides into the liner.
- Close and tighten pressure assembly.

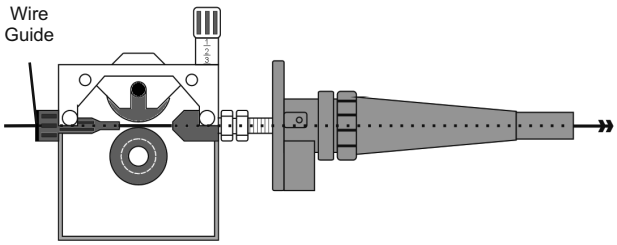


Figure 11: Pressure Assembly - Closed

- Turn on the machine by adjusting the switch for coarse tuning **(1)** to the position “1”. While pushing the trigger of the torch, wait until the wire comes out of the torch tip.

3. USAGE INFORMATION

3.1 ADJUSTING THE GAS FLOW

DO NOT ADJUST THE GAS FLOW DURING WIRE FEEDING.

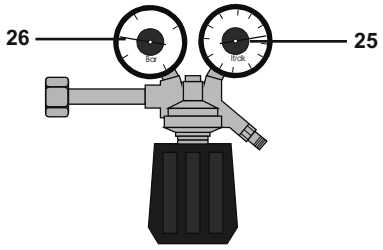
The indicators on the regulator at the tube side shows the pressure in “Bar” and the other shows the flow rate “l/min”.

Appropriate gas flow rate must be between 8 and 10 times of the diameter of the wire in use. The practical ratio is 10.

EXAMPLE:

Diameter of the wire: 1,2 mm

Gas flow rate: 10 x 1,2 = 12 lt/min



25 Flowmeter
26 Manometer

Figure 12: Pressure Regulator

3.2 ALIGNING DRIVE ROLLS FOR APPROPRIATEWIRE DIAMETER

Always control the rolls on the flange for compatibility with diameter of the wire, because alignment problems are out of warranty.

Both sides of the rolls are labeled according to appropriate wire diameter.

Rolls must be inserted into the flange in such a way that appropriate diameter of the wire to be feeded is seen from outside. After installing the rolls, the screws should be positioned and fastened.

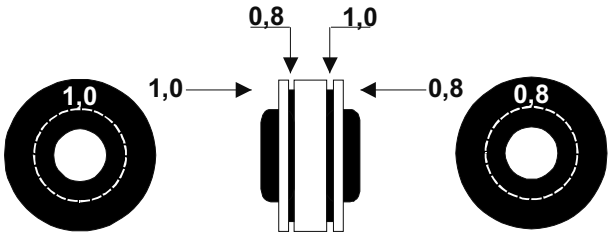


Figure 13: Wire Feeding Roll

3.3 ADJUSTING THE FREE WIRE LENGTH

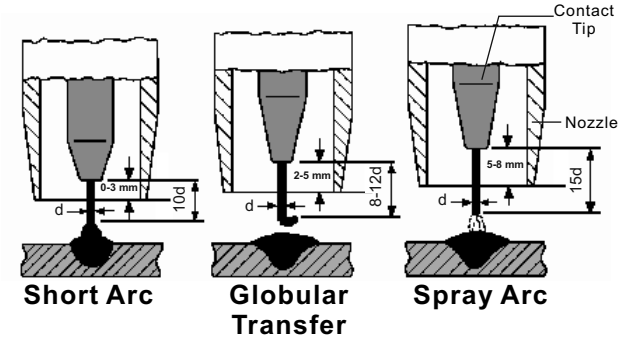


Figure 14: Arc Lengths

In order to obtain good welding characteristics, free wire length has to be adjusted by the following instructions. The diameter of the wire and the distance between the nozzle and the contact tip is important.

Arc Type	Wire Diameter (d)	Coefficient	Free Wire Length
Short Arc	1,0	10d	10
Globular Transfer	1,0	12d	12
Spray Arc	1,0	15d	15

3.4 THE FUNCTIONS OF THE 2-4 SWITCH

This switch **(13)** is also called 2-4 switch, indicating the number of torch switch strokes.

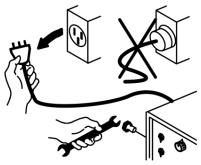
Mode 2 *:* When operating at mode 2, once the switch is triggered, wire feeding and current starts and when it is released the operation ends.

Mode 4 *:* Mode 4 gives more comfort to the welder for long welding operations and automatic applications, when the switch is triggered and released the welding starts, when again the switch is triggered and released the operation ends.

3.5 SETTINGS FOR ALUMINUM WELDING

- Argon must be used as protective gas. In this case the gas heater is necessary.
- Wire feeding rolls has to be replaced with U groove rolls. Less pressure should be applied on the feeding rolls than steel.
- Steel torch liner has be replaced with a teflon liner.
- Longer and larger inner diameter contact tips should be used.

4. MAINTENANCE AND TROUBLESHOOTING



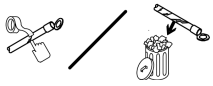
Before removing any screw on the machine for maintenance, power supply must be disconnected from the electric lines and enough time should be allowed for capacitor discharging. During maintenance, pay attention to the moving parts in the machine such as ventilator, wire feeding motor, rolls and, wire spool.

4.1 PERIODIC MAINTENANCE

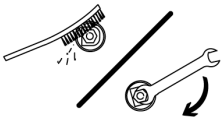
Once every three months

Clean the labels on the machine. Repair or replace the worn out labels.

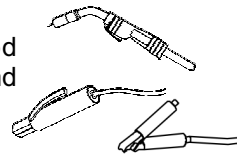
Repair or replace the worn out welding cables.



Clean and tighten weld terminals.

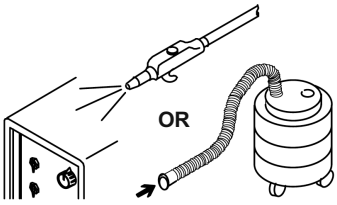


Check torch, electrod holder, earth clamp and their cables.



Once every six months

Open the covers of the machine and clean with dry air.

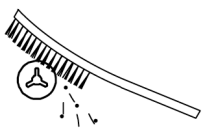


NOTE: The above recommended maintenence periods are indicative according to our general experience, these may vary from work shop to work shop and the conditions of the welding site.

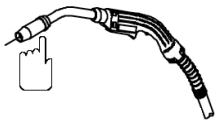
DO NOT CONNECT THE MAINS ELECTRIC BEFORE CLOSING THE CABINET PANELS.

4.2 NONPERIODIC MAINTENANCE

Wire feeding rolls and the surrounding parts should be kept clean and the surface of the drive rolls should definitely not be lubricated. Each time the wire is replaced, the dirt accumulated on the mechanism must be cleaned with dry air .



Contact tip and nozzle on the torch have to be cleaned regularly and changed if required. Contact tips must be in good condition, longer tips generally give better results.



4.3 BASIC TROUBLESHOOTING

TROUBLE	REASON	REMEDY
Machine does not work.	Fuse is blown out “F1”.	Change the fuse.
	Contactor is out of order.	Contact your authorized technical service.
	Electronic Card is out of order.	
Wire feeder doesn’t work. Torch doesn’t perform the triggering.	Fuse is blown out “F1”.	Change the fuse.
	Electronic card is out of order.	Contact your authorized technical service.
Wire feeder works but wire is not fed.	The drive roll is not appropriate for the wire diameter.	Select the appropriate drive roll.
	Pressure in the pressure roll is not enough.	Adjust the pressure roll as explained in the Section 2.4.6.
Trouble in welding operation.	Contact tip size is wrong or it is worn out.	Change the contact tip.
	Pressure in the pressure roll is not enough.	Adjust the pressure roll as explained in the Section 2.4.6.
	CO2 heater fuse is blown out “F3”.	Change the fuse.
	Protective gas pressure is not appropriate.	Check the gas and its adjustment. Contact the authorized service if the gas adjustment can not be made.
Ventilator does not function.	Fuse is blown out “F3”.	Change the fuse.
	Ventilator motor is out of order.	Contact your authorized technical service.
Machine works noisily.	Contactor is out of order.	Contact your authorized technical service.
Welding current isn’t stabilized and/or cannot be adjusted.	Some diodes in the power pack are out of order.	Contact your authorized technical service.
Heater socket is not working.	Fuse is blown out “F3”.	Change the fuse.
Voltmeter or ampermeter is not working.	Fuse is blown out “F4”.	Change the fuse.
	Electronic card is out of order.	Change the fuse.

APPENDIX 1
WELDING PARAMETERS CHART FOR RS 200 MK

		CO_2					Ar/CO_2 (80/20)				
Ø : 0,6 mm	mm	0.5	1	2			0,5	1	2	3	
		1	1	1			1	1	1	2	
		3	6	7			2	4	5	1	
		4,0	6,0	7,5			4,5	7,0	8,0	13,5	
	A	40	50	70			40	60	68	96	
	V	17,5	20,5	21			16,5	17,5	18,5	21,5	
Ø : 0,8 mm	mm	1	2	3			1	2	3	5	5
		1	1	2			1	1	2	2	2
		5	7	2			4	6	1	5	7
		2,5	4,5	6,5			4,0	6,5	8,5	14,5	18,5
	A	50	80	98			70	100	125	170	208
	V	19	20,5	23			17,5	18,5	20,5	27	31,5
Ø : 1,0 mm	mm	2	3	5	10		2	3	5	5	10
		1	2	2	2		1	2	2	2	2
		7	2	4	6		5	1	4	7	7
		3,5	4,5	6	10,5		4,5	6,3	9,3	11,1	19,2
	A	98	110	142	195		103	140	208	244	244
	V	18	20	22,5	23,5		17	19,5	22,5	29,5	29,5
Ø : 1,2 mm	mm	2	3	5	10		3	5	10		
		2	2	2	2		2	2	2		
		1	3	5	7		2	7	7		
		3	3,5	5	8,5		4,5	7,5	7,5		
	A	124	133	182	240		177	262	262		
	V	20	23,5	26	29,5		20	28,5	28,5		

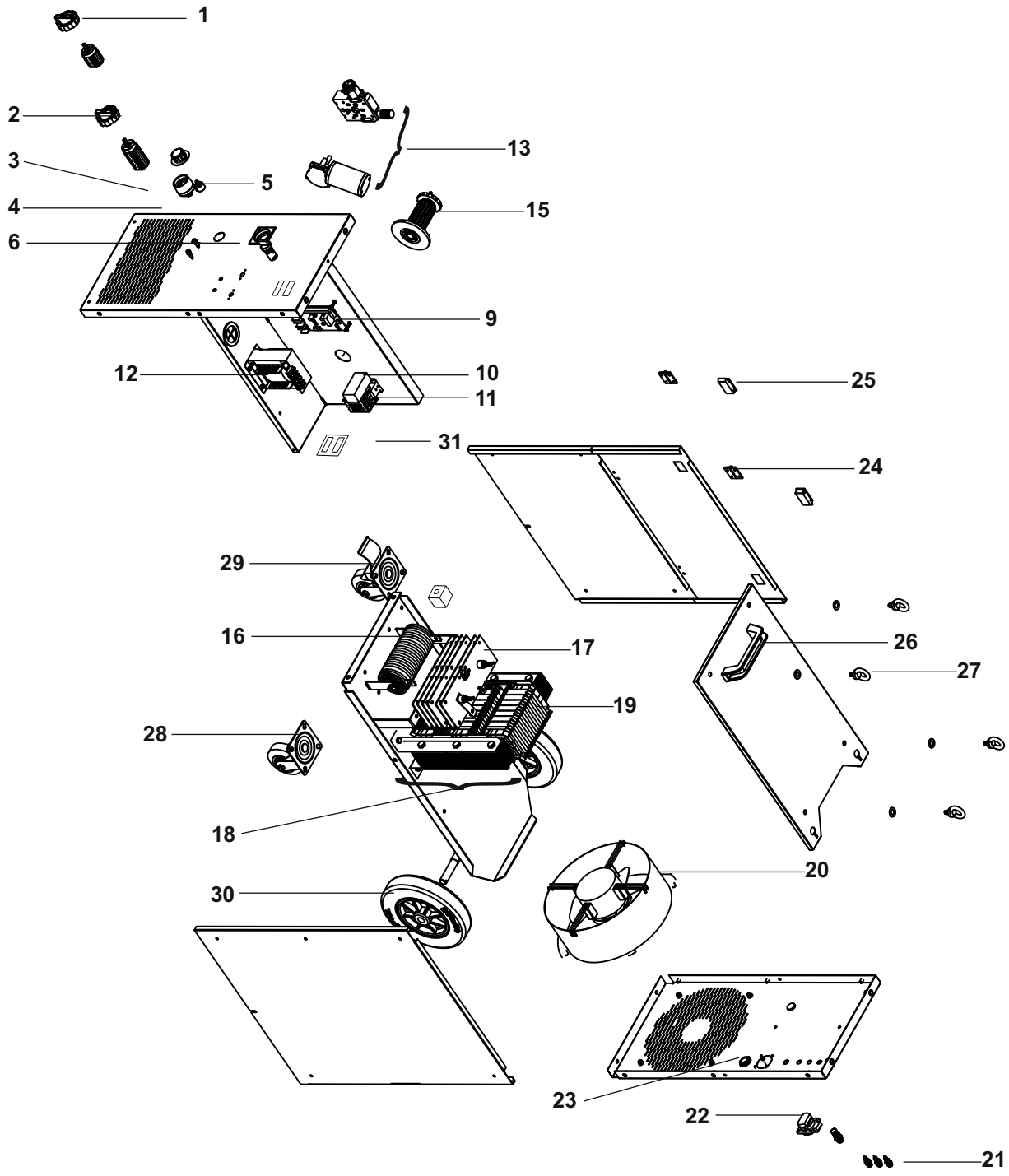
APPENDIX 2
WELDING PARAMETERS CHART FOR RS 300 MK

		CO_2					Ar/CO_2 (80/20)				
Ø : 0,6 mm	mm	0.5	1	2			0,5	1	2	3	
		1	1	1			1	1	1	1	
		1	3	5			1	2	4	7	
		3	4,8	6,5			5,2	7,1	8,3	13	
	A	35	60	70			70	80	90	120	
	V	18	19	20			17	18	19	20	
Ø : 0,8 mm	mm	1	2	3			1	2	3	5	5
		1	1	2			1	1	1	2	3
		2	5	1			2	4	6	7	4
		2,8	5	6,7			4,7	6,9	8,1	14,2	18,7
	A	50	90	100			80	110	130	180	240
	V	19	20	22			18	19	20	26	31
Ø : 1,0 mm	mm	2	3	5	10		2	3	5	5	10
		1	1	2	3		1	1	2	3	3
		3	5	2	2		2	5	6	2	6
		3,2	3,8	6,3	11,2		4,5	6,3	9,3	11,1	19,2
	A	100	110	150	210		120	150	200	230	300
	V	18	19	21	28		17	18	24	28	34
Ø : 1,2 mm	mm	3	5	10	12	14	3	5	5	10	14
		1	2	3	3	3	1	2	3	3	3
		6	6	1	2	3	5	6	3	6	7
		3,1	5,8	7,2	7,3	8	4,1	7,5	8,4	10,5	12,4
	A	130	190	220	230	240	170	240	260	330	360
	V	19	24	26	27	29	18	23	28	31	33

APPENDIX 3
WELDING PARAMETERS CHART FOR RS 400 MK

		CO_2					Ar/CO_2 (80/20)				
Ø : 0,8 mm	mm	1	2	3			1	2	3	5	5
		1	1	2			1	1	2	2	3
		5	7	3			3	7	1	6	7
		3	3,6	4,6			4,5	5,5	7,9	11,4	16,8
	A	60	70	80			80	90	110	150	180
	V	19	20	21			18	19	19	22	29
Ø : 1,0 mm	mm	2	3	5	10		2	3	5	5	10
		2	2	3	3		1	2	3	4	4
		2	5	1	6		7	3	1	1	5
		3,4	5,1	6,1	10		3,8	6	7,1	13,1	17,9
	A	100	120	130	180		100	160	170	220	270
	V	20	22	24	28		19	20	23	29	34
Ø : 1,2 mm	mm	3	5	10	12	14	3	5	5	10	14
		2	3	3	3	4	2	3	4	4	4
		3	1	5	7	1	2	1	1	6	7
		2,7	5	6,7	8,2	8,6	3,8	5,8	9,3	13,3	13,5
	A	120	160	190	220	230	150	190	250	330	340
	V	21	23	26	28	29	19	22	28	35	36

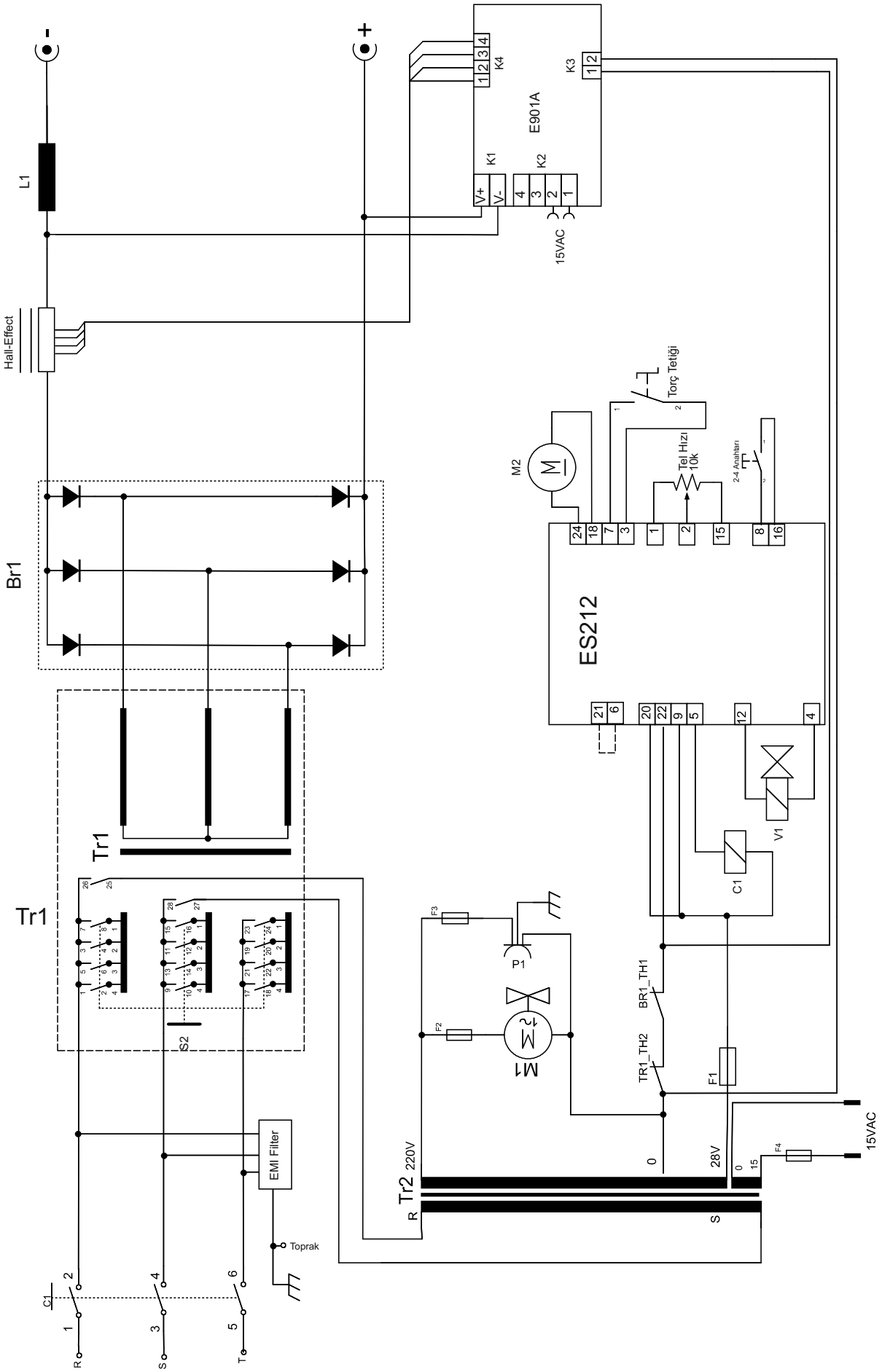
APPENDIX 4
SPARE PARTS LIST FOR RS 200 MK / RS 300 MK / RS 400 MK



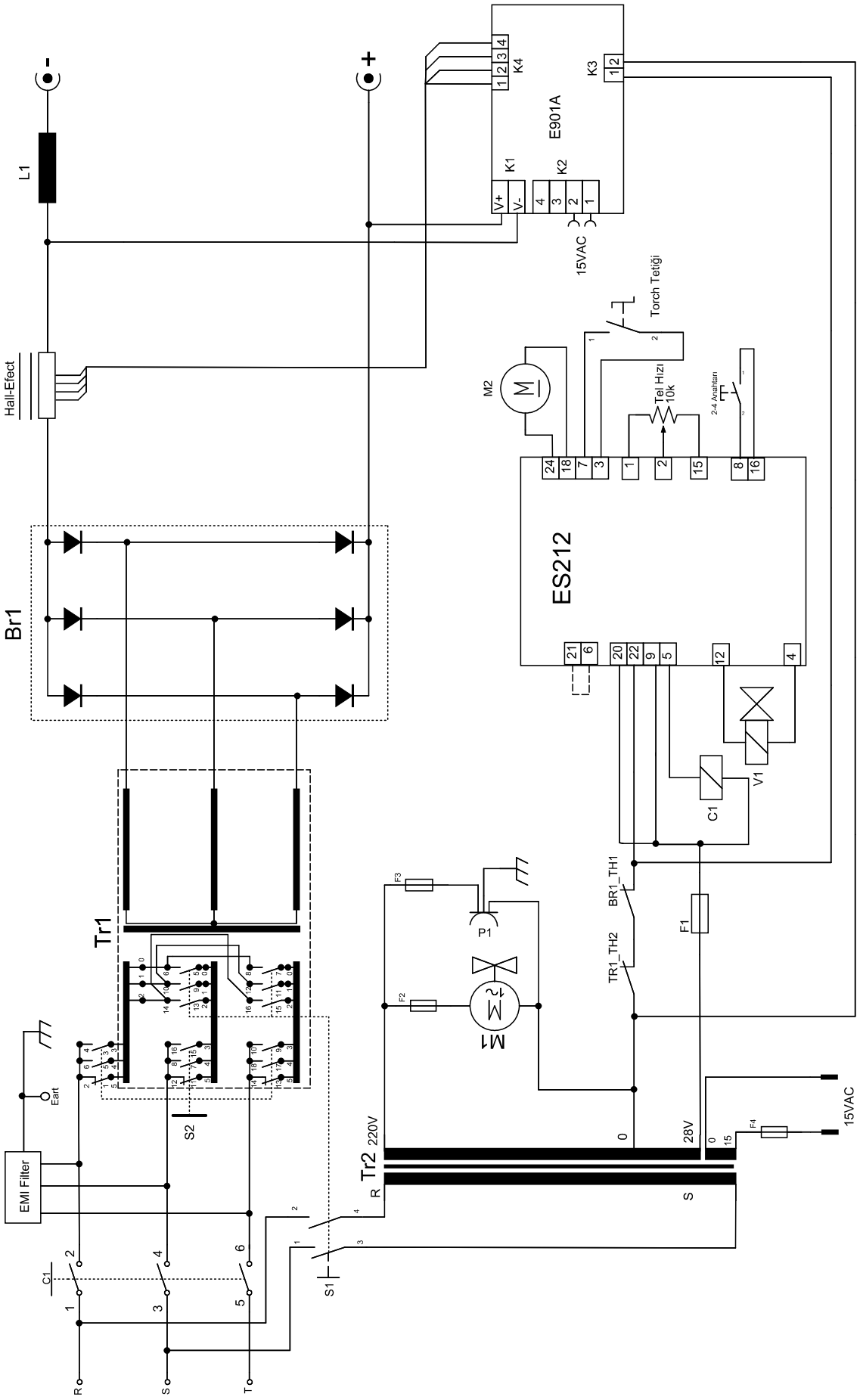
APPENDIX 4
SPARE PARTS LIST FOR RS 200 MK / RS 300 MK / RS 400 MK

NO	DESIGNATION			MATERIAL CODE		
				RS 200 MK	RS 300 MK	RS 400 MK
1	Changeover Switch (1-10)	Changeover Switch (0-3)	Changeover Switch (0-4)	A308033106	A308033112	A308033114
2	Changeover Switch (1-7)			A308033108	A308033108	A308033108
3	Wire Feeding Speed Adjustmend Knob			A229500002	A229500002	A229500002
4	Potentiometer - 10K			A410801004	A410801004	A410801004
5	Welding Socket 35-70			A377900106	A377900106	A377900106
6	Switch For 2/4 Function Selection			A310030002	A310030002	A310030002
9	Electronic Board - ES212			K405000032	K405000032	K405000032
10	EMC Filter			A490400001	A490400001	A490400001
11	Contactor 24VAC/16A	Contactor 24VAC/16A	Contactor 24VAC/25A	A311000016	A311000016	A311000025
12	Control Transformer - 500VA			K304400024	K304400024	K304400024
13	Wire Feeding System			K309002210	K309002210	K309002210
15	Wire Coil Support			A229900004	A229900004	A229900004
16	Impedance Coil RS 200	Impedance Coil RS 300	Impedance Coil RS 400	K304500032	K304500040	K304500044
17	Diode Bridge - 160A	Diode Bridge - 240A	Diode Bridge - 350A	A430901009	A430901010	A430901011
18	Main Transformer RS 300	Main Transformer RS 300	Main Transformer RS 400	K304000052	K304000060	K304000064
19	Prim. Secondary RS 200	Prim. Secondary RS 300	Prim. Secondary RS 400	K302200040	K302200048	K302200056
20	Axial Aspirator	Cooling Ventilator	Cooling Ventilator	A250100003	A250200003	A250200003
21	Glass Fuse Socket - 20x5mm			A300190001	A300190001	A300190001
22	Mono-phase Machine Socket - 16A/240V			A377100004	A377100004	A377100004
23	Gas Ventile - 24 VDC			A253200001	A253200001	A253200001
24	Hinge			A229200004	A229200004	A229200004
25	Panel Cabinet Lock			A229300006	A229300006	A229300006
26	Bakalite U Arm			A229102002	A229102002	A229102002
27	Eye Bolt - M10			A281000010	A281000010	A281000010
28	Swivel Plastic Wheel 100x35			A225220008	A225220008	A225220008
29	Swivel Plastic Wheel - Braked 100x35			A225220106	A225220106	A225220106
30	Plastic Wheel 250x50x20			A225222010	A225222010	A225222010
31	Ampermeter-Voltmeter Card E901A			K405000016	K405000016	K405000016

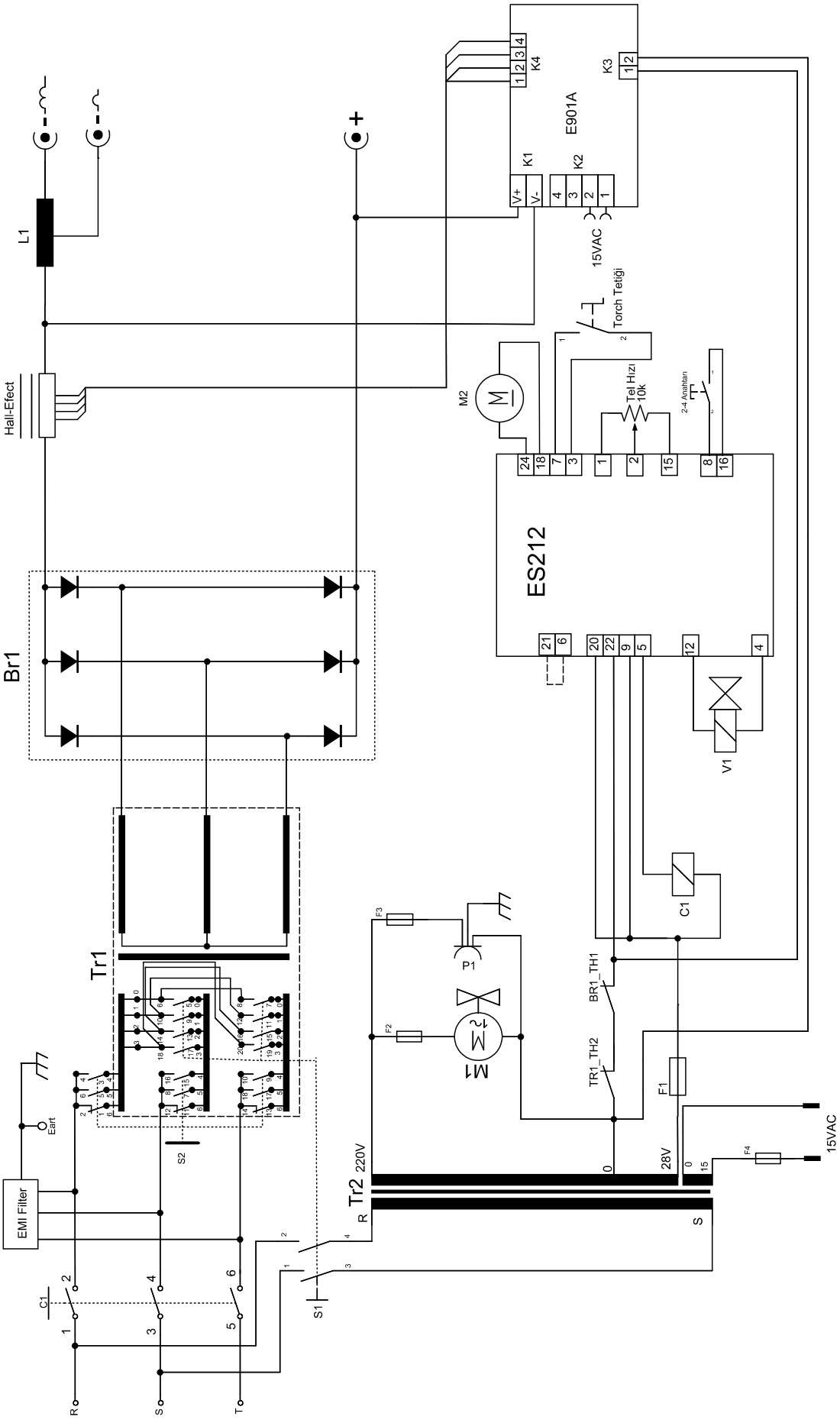
APPENDIX 5
ELECTRICAL DIAGRAM FOR RS 200 MK



APPENDIX 6
ELECTRICAL DIAGRAM FOR RS 300 MK



APPENDIX 7
ELECTRICAL DIAGRAM FOR RS 400 MK



FACTORY

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